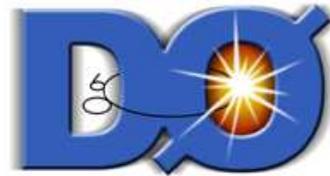




# Level 2 Trigger Overview

L2 tutorial for DAQ shifters ...



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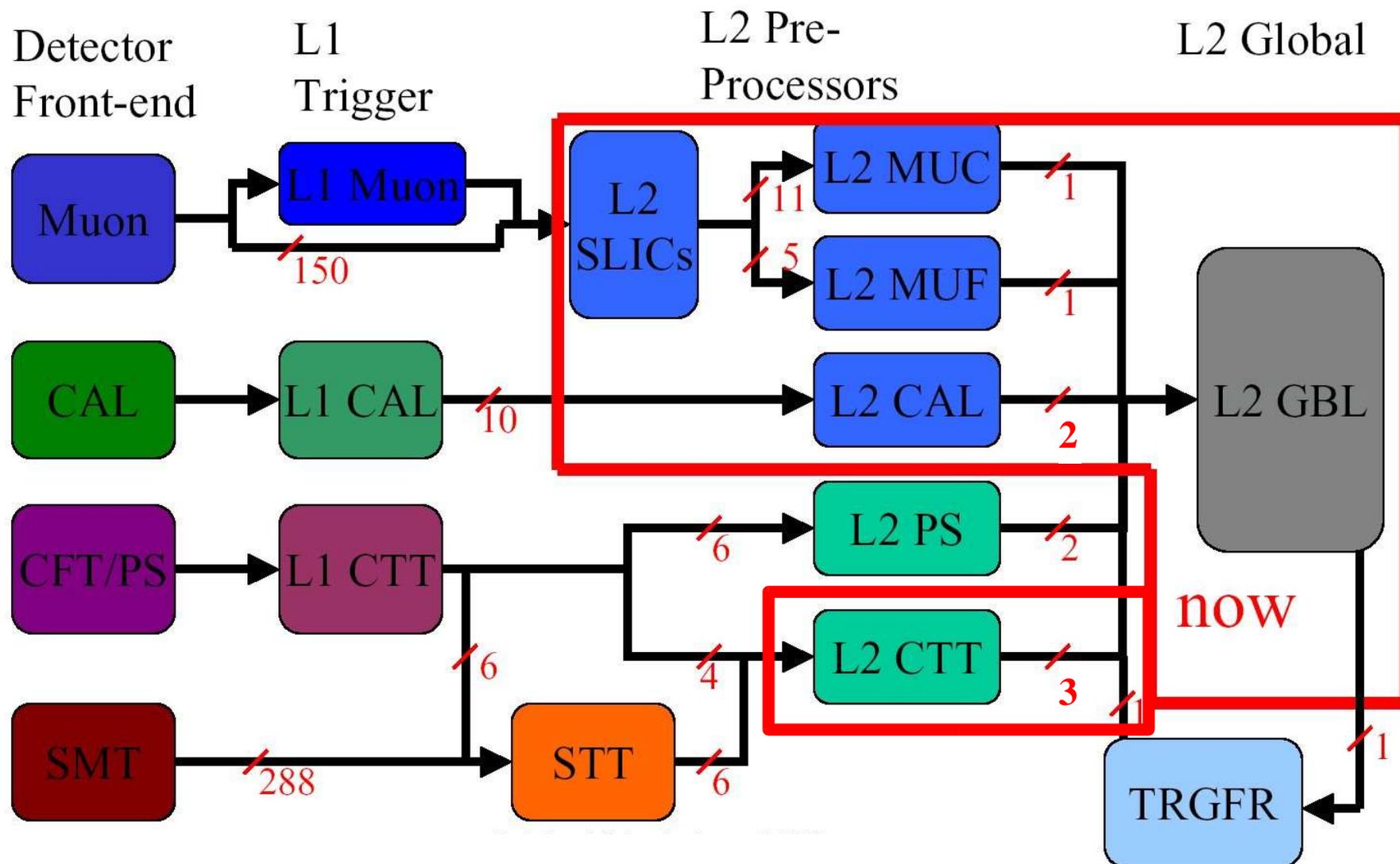


# Outline

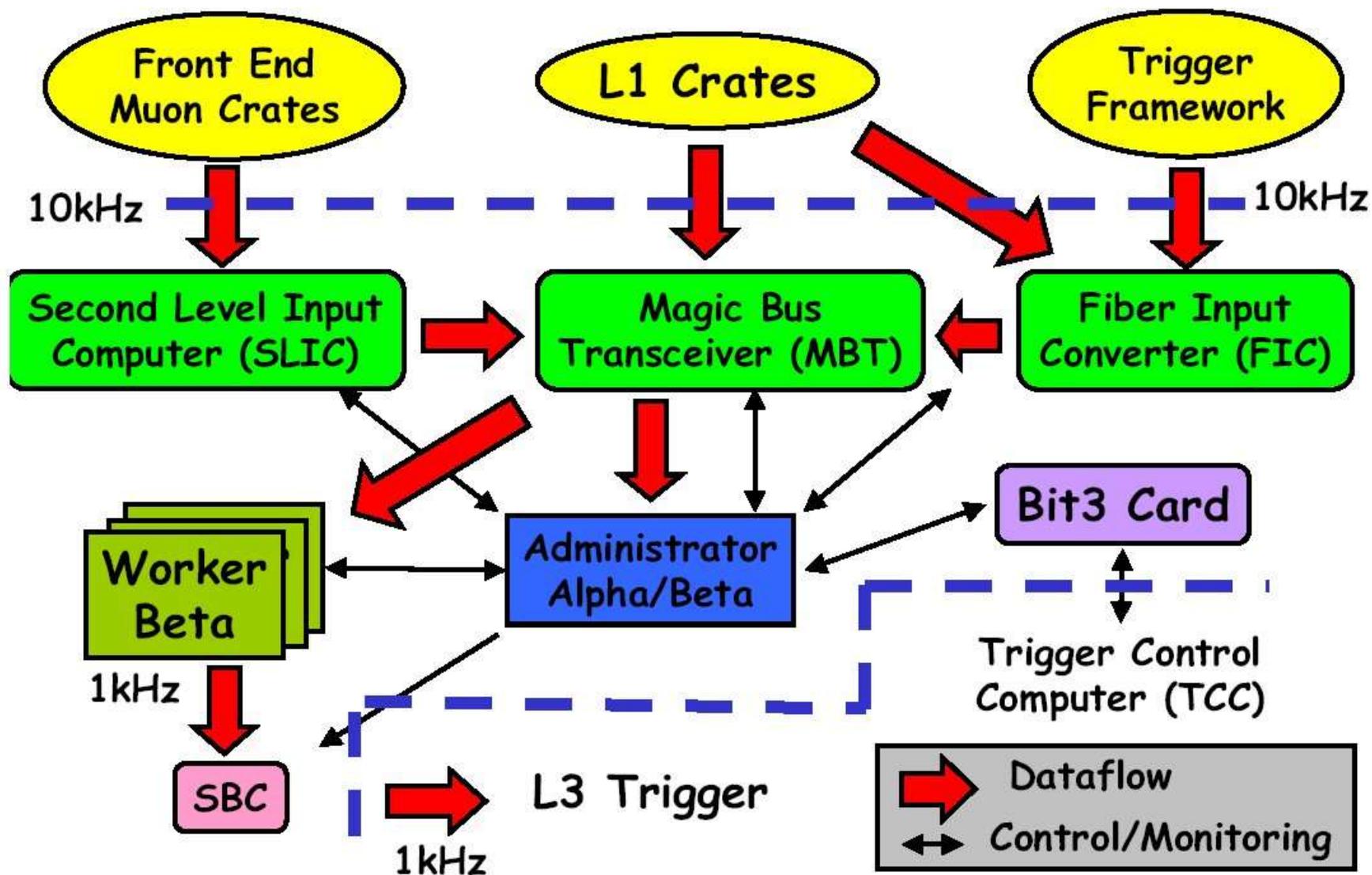
---

- L2 Trigger Data Flow
- L2 Controls
  - ◆ L2 Trigger Control Computer
- L2 Monitoring
  - ◆ L2 Data Flow GUI
- L2 Operations
  - ◆ what you must know about L2
  - ◆ common problems and solutions
  - ◆ contacts and resources
    - where to find information about L2

# L2 Trigger Data Flow - trigger framework

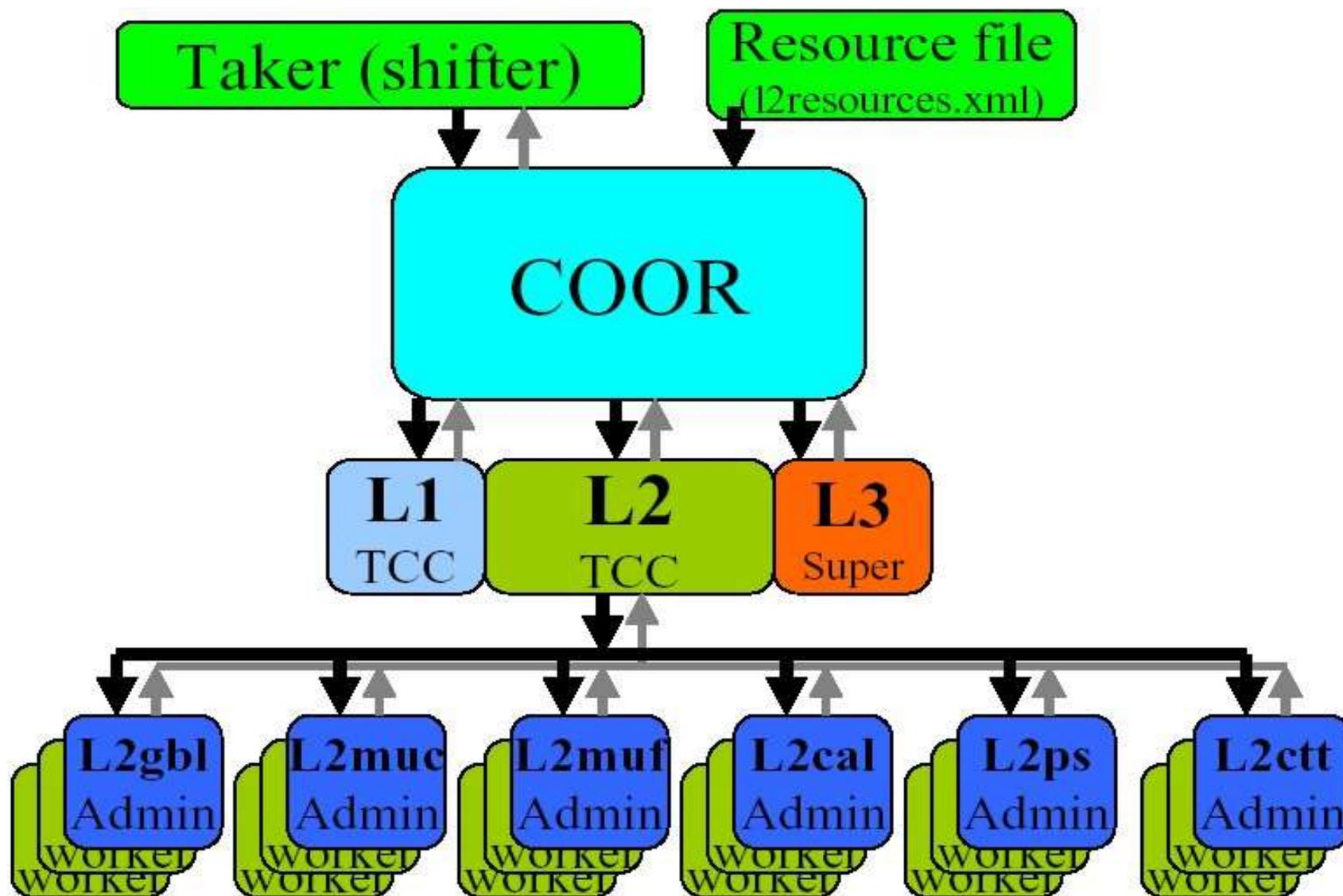


# L2 Trigger Data Flow - single L2 crate





# L2 Trigger Data Flow - configuration





# L2 Controls - TCC2

---

- Level 2 Trigger Control Computer (L2TCC or TCC2)
  - runs L2 Relay Software (or L2RS) ... next page
- interface to COOR and monitoring
- configures and controls all L2 crates
  - ◆ contains static configuration files for all L2 crates downloaded when COOR is initialized
  - ◆ forwards COOR messages to all L2 crates when run is being started or stopped



# L2 Controls - L2RS

---

- L2RS is equivalent to Trics in L1TCC
- provides an access to all L2 crates (only for L2 experts!)
  - ◆ send messages to L2 administrator, eg. Configure, exit/enter event loop, status report, etc. ...
- provides a log window with recent activity
  - ◆ monitoring information: I\$
  - ◆ messages information from COOR (run start/stop): M\$
  - ◆ error messages: E\$, eg. "failure communication with admin" when there is a problem with L2 crate

Useful, when debugging L2 problems. Look at it, but **DO NOT** touch it!



# L2 Controls - L2RS

log messages  
(look here!)

**L2RS V3.1 Rev A**

**L2 Fake COOR Messages**

Send a Fake COOR Message to L2 TCC

Initialize     Start Run     Stop Run  
 L2 Crate List     Enter Evt Loop     Exit Evt Loop     Collect Status  
 Send CmdBuf     Dump Cmd Buf     Dump Status  
 L2 Script     Configure\_Crate     Exit Program  
 Monit Level     L2 Global     L2 Cal     L2 Mu Cen  
 L2 Mu Fwd     L2 CTT     L2 PS

Load L2CTT CmdBuf...    Clear L2CTT CmdBuf

Dump\_Status L2CTT

Send    Check Rep

Ok <Crate Status for L2CTT Crate><Done>

---

Send Message Command File (Each line must be a whole command)

\Trics

Find...    Execute    Syntax Rule

Show Progress     Show Details

Done

```

I: Monitor Data Length =0x000012dc for L2MuCen
I: Monitor Data Length =0x0000f70 for L2MuFwd
I: Monitor Data Length =0x0000e0c for L2Cal
I: Monitor Data Length =0x0000da4 for L2PS
I: Monitor Data Length =0x0000db0 for L2CTT
I: Err Msg Data Length =0x00000005 for L2Global
I: Err Msg Data Length =0x00000005 for L2MuCen
I: Err Msg Data Length =0x00000005 for L2MuFwd
I: Err Msg Data Length =0x00000005 for L2Cal
I: Err Msg Data Length =0x00000005 for L2PS
I: Err Msg Data Length =0x00000005 for L2CTT
I: Monitor Data Length =0x0000101c for L2Global
I: Monitor Data Length =0x000012dc for L2MuCen
I: Monitor Data Length =0x0000f70 for L2MuFwd
I: Monitor Data Length =0x0000e0c for L2Cal
I: Monitor Data Length =0x0000da4 for L2PS
I: Monitor Data Length =0x0000db0 for L2CTT
I: Err Msg Data Length =0x00000005 for L2Global
I: Err Msg Data Length =0x00000005 for L2MuCen
I: Err Msg Data Length =0x00000005 for L2MuFwd
I: Err Msg Data Length =0x00000005 for L2Cal
I: Err Msg Data Length =0x00000005 for L2PS
I: Err Msg Data Length =0x00000005 for L2CTT
I: Monitor Data Length =0x0000101c for L2Global
I: Monitor Data Length =0x000012dc for L2MuCen
I: Monitor Data Length =0x0000f70 for L2MuFwd
I: Monitor Data Length =0x0000e0c for L2Cal
I: Monitor Data Length =0x0000da4 for L2PS
I: Monitor Data Length =0x0000db0 for L2CTT
I: Err Msg Data Length =0x00000005 for L2Global
I: Err Msg Data Length =0x00000005 for L2MuCen
I: Err Msg Data Length =0x00000005 for L2MuFwd
I: Err Msg Data Length =0x00000005 for L2Cal
I: Err Msg Data Length =0x00000005 for L2PS
I: Err Msg Data Length =0x00000005 for L2CTT
I: Monit Flag for L2Cal Crate on Adapter #3= Admin Writing->ICC Waiting
I: Monit Flag for L2PS Crate on Adapter #4= Admin Writing->ICC Waiting
I: Monit Flag for L2CTT Crate on Adapter #5= Admin Writing->ICC Waiting
I: Err Msg Data Length =0x00000005 for L2Global
I: Err Msg Data Length =0x00000005 for L2MuCen
I: Err Msg Data Length =0x00000005 for L2MuFwd
I: Err Msg Data Length =0x00000005 for L2Cal
I: Err Msg Data Length =0x00000005 for L2PS
I: Err Msg Data Length =0x00000005 for L2CTT
I: Monitor Data Length =0x0000101c for L2Global
I: Monitor Data Length =0x000012dc for L2MuCen
I: Monitor Data Length =0x0000f70 for L2MuFwd
I: Monitor Data Length =0x0000e0c for L2Cal
I: Monitor Data Length =0x0000da4 for L2PS
I: Monitor Data Length =0x0000db0 for L2CTT
  
```

crate interface  
(do not touch!)

L2 L2 L2 L2 L2 L2 L2 L2 L2 L2



# L2 Controls - L2RS

```

m$ INPUT_DIR10 = 4, # ID 0x167
I$ Process Msg Command : <L2 Script for L2MuFwd Crate>
I$ <Done>
M$ Receive Msg # 2002 : 00000000000107673 l2script L2CAL ADMIN IPMANAGER <
m$ ALPHACH0 = 0, # none
m$ ALPHACH1 = 1, # L1CAL 1
m$ ALPHACH2 = 1, # L1CAL 2
m$ ALPHACH3 = 1, # L1CAL 3
m$ ALPHACH4 = 1, # L1CAL 4
m$ ALPHACH5 = 1, # L1CAL 5
m$ ALPHACH6 = 1, # L1CAL 6
m$ ALPHACH7 = 1, # L1CAL 7
m$ ALPHACH8 = 0, # L1CAL 8
m$ ALPHACH9 = 0, # L1CAL 9
m$ ALPHACH10 = 0, # none
m$ ALPHACH11 = 0, # none
m$ ALPHACH12 = 0, # none
m$ ALPHACH13 = 0, # none
m$ L2CAL ADMIN PILOTMBT <
m$ UMESLOT = 20, # UME slot number of the card
m$ CHAN0 = -1, # none
m$ CHAN1 = 2, # L1CAL 1
m$ CHAN2 = 3, # L1CAL 2
m$ CHAN3 = 4, # L1CAL 3
m$ CHAN4 = 5, # L1CAL 4
m$ CHAN5 = 6, # L1CAL 5
m$ CHAN6 = 7, # L1CAL 6
m$ CHAN7 = 0, # SCL
m$ DISP_CHAN = 7, # Channel to display on the MBT front panel
m$ TEST_SCL = 0, # Disable testing mode
m$ CYCLE_BUFFERS = 1, # cycle the b7
I$ Process Msg Command : <L2 Script for L2Cal Crate>
I$ <Done>
M$ Receive Msg # 2003 : 00000000000107675 start_run 173220 4
I$ Process Msg Command : <Start Run #173220 for Spec Trig(s) # 4>
I$ Process Msg Command : <Start Run for L2Cal Crate>
I$ Admin has noticed the new commands for L2MuFwd Crate: TCC Waiting
I$ Admin Replied Ok for L2MuFwd Crate
I$ <Done>
I$ Process Msg Command : <Start Run for L2Cal Crate>
I$ Err Msg Data Length =0x0000016d for L2MuFwd
I$ Monitor Data Length =0x0000103d for L2MuFwd
I$ Sending TCC->L2Cal Admin Command <EXIT_EUENTLOOP>
I$ Waking Up L2Cal Admin
I$ Waiting for L2Cal Admin Reply
I$ Admin Replied Ok for L2Cal Crate
I$ Relaying COOR Commands to L2Cal Buffer - 1 Commands, 1781 Bytes
I$ Waking Up L2Cal Admin
I$ Waiting for L2Cal Admin Reply
I$ Admin has noticed the new commands for L2Cal Crate: ICC Waiting
I$ Admin Replied Ok for L2Cal Crate
I$ Clearing L2Cal Crate Command Buffer
I$ Sending TCC->L2Cal Admin Command <ENTER_EUENTLOOP>
I$ Waking Up L2Cal Admin
I$ Waiting for L2Cal Admin Reply
I$ Err Msg Data Length =0x00000005 for L2Cal
I$ Monitor Data Length =0x00000dd5 for L2Cal
I$ Admin has noticed the new commands for L2Cal Crate: ICC Waiting
I$ Admin Replied Ok for L2Cal Crate
I$ <Done>
I$ Err Msg Data Length =0x00000005 for L2Global
I$ Err Msg Data Length =0x00000221 for L2MuCen

```

COOR  
Download

Good  
Start Run

```

I$ Sending TCC->L2MuCen Admin Command <COLLECT_STATUS>
I$ Waking Up L2MuCen Admin
I$ Waiting for L2MuCen Admin Reply
E$ Timeout waiting for Admin to Wake Up for L2MuCen Crate: TCC Give Up
I$ Sending TCC->L2Cal Admin Command <COLLECT_STATUS>
I$ Waking Up L2Cal Admin
I$ Waiting for L2Cal Admin Reply
E$ Timeout waiting for Admin to Wake Up for L2Cal Crate: TCC Give Up
I$ Sending TCC->L2MuFwd Admin Command <COLLECT_STATUS>
I$ Waking Up L2MuFwd Admin
I$ Waiting for L2MuFwd Admin Reply
E$ Timeout waiting for Admin to Wake Up for L2MuFwd Crate: TCC Give Up
I$ Sending TCC->L2Global Admin Command <COLLECT_STATUS>
I$ Waking Up L2Global Admin
I$ Waiting for L2Global Admin Reply
E$ Timeout waiting for Admin to Wake Up for L2Global Crate: TCC Give Up
I$ Sending TCC->L2MuCen Admin Command <COLLECT_STATUS>
I$ Waking Up L2MuCen Admin

```

messages:  
problem with L2  
crates: L2MUF, ...



# L2 Monitoring

SLIC inputs  
(muon channels)

unused or  
disabled  
inputs

switch between  
channel/crate  
and occupancy

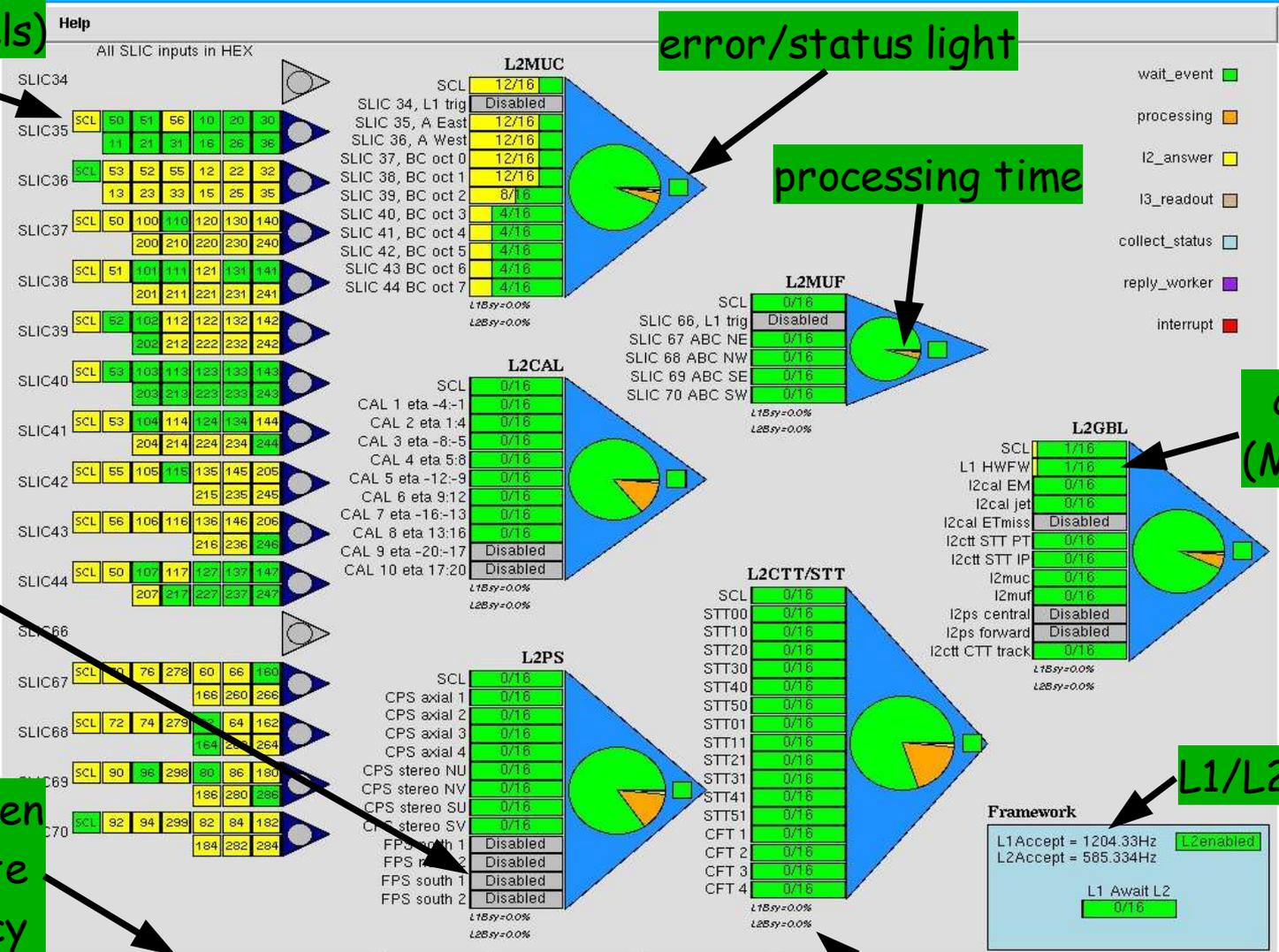
error/status light

processing time

crate inputs  
(MBT channels)

L1/L2 rates

L1/L2 FEB



SLIC Input Text    Toggle Text    Strip Chart    Error Log

Channel #    Muon RO Crate    Event Occ    Text ON    StripChart ON    Error Log ON

# L2 Monitoring

- Level 2 data flow GUI (l2df)

- ◆ information flow  $\Rightarrow$  read it as it flows from left to right

- MDT/PDT/scintillator channels = SLICs' inputs

muon crates (x30-3b)  $\rightarrow$  L2 SLICs  $\rightarrow$   
 $\rightarrow$  L2MUC (x21) or/and L2MUF (x22)

L1CAL (x10)  $\rightarrow$  L2CAL (x23)

... no inputs from CAL crates (x40-4c)

L1CTT (---)  $\rightarrow$  L2PS (x24)

... no inputs for FPS

L1CTT (---)  $\rightarrow$  L2CTT (x25)

... crate x13 is only L1CTT readout crate - does not send any data to L2

L1TFW+L2  $\rightarrow$  L2GBL (x20)



# L2 Monitoring

---

- big triangles

- ◆ L2 preprocessors - crates' administrator

- pie charts

- ◆ timing information: await/idle an event, processing, L2 answer, L3 readout, collect status, worker replay, interrupt

- framework information

- ◆ L1 and L2 rates, L1 await L2

- l2df GUI

- ◆ every 5 seconds - monitoring information comes from the L3 monitor server's DAQMON scraper (`l3ms_util_clients` server)



# L2 Monitoring

---

GREEN color = idle/empty

- empty input buffer
- SLIC/Beta in idle state
- TFW is not waiting for L2 global

RED color = error

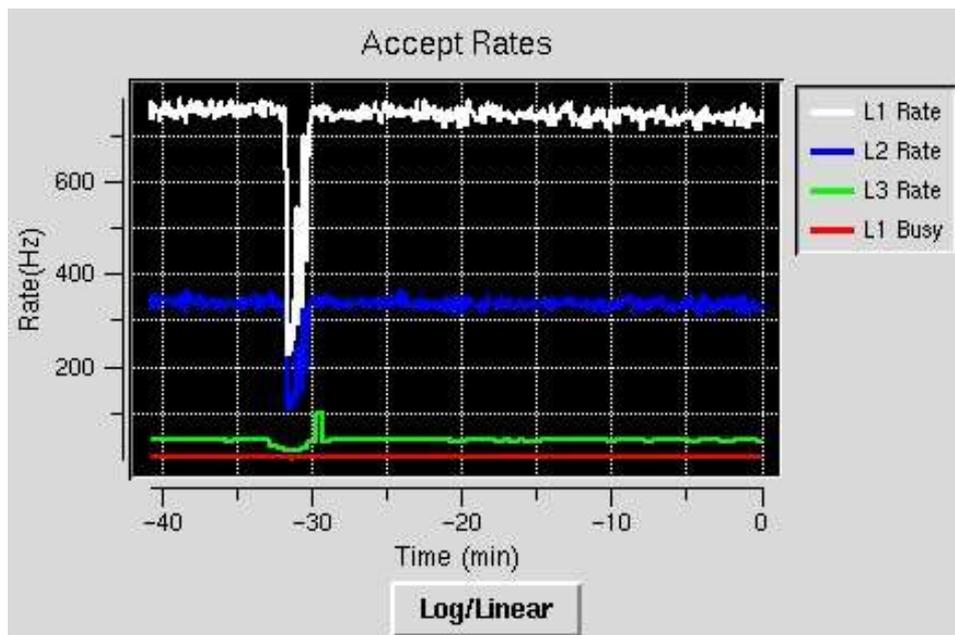
- administrator errors (red box)
- input error

ORANGE or YELLOW = working

- processing event (orange)
- input buffers filled (yellow)

GRAY color = disable

# L2 Monitoring



- stripmon - up to 70 min of L1, L2, L3 and FEB rates history
- available as stand alone plot (but usually, it is part of l2df)
  - global L1, L2 and L3 rates
  - specific triggers rates/FEB
  - geometric-sector rates and busies

```

Copy Save Find Clear Save and Clear Quit message recieved 23 n
Sat Nov 29 12:30:55 2003 Missing Input: SLIC 39, BC oct 2 SLIC Index 5, Channel Index13,
ID x242, Readout Crate x34 *FIXED*
Sat Nov 29 12:34:02 2003 Missing Input: L2MVC, MBT 0, Channel 6, Alpha Index 7
Sat Nov 29 12:34:02 2003 Missing Input: SLIC 39, BC oct 2 SLIC Index 5, Channel Index13,
ID x242, Readout Crate x34
Sat Nov 29 12:40:53 2003 Missing Input: L2MVC, MBT 0, Channel 6, Alpha Index 7 *FIXED*
Sat Nov 29 12:40:54 2003 Missing Input: SLIC 39, BC oct 2 SLIC Index 5, Channel Index13,
ID x242, Readout Crate x34 *FIXED*
Sat Nov 29 12:41:05 2003 Missing Input: L2MVC, MBT 0, Channel 6, Alpha Index 7
Sat Nov 29 12:41:05 2003 Missing Input: SLIC 39, BC oct 2 SLIC Index 5, Channel Index13,
ID x242, Readout Crate x34
Sat Nov 29 12:46:45 2003 Missing Input: L2MVC, MBT 0, Channel 6, Alpha Index 7 *FIXED*
Sat Nov 29 12:46:45 2003 Missing Input: SLIC 39, BC oct 2 SLIC Index 5, Channel Index13,
ID x242, Readout crate x34 *FIXED*
    
```

- L2 message box
  - information about missing inputs
  - time to the last missing input



# L2 Operations

---

- DAQ shifter wants to start downloading global physics trigger list
  - ◆ check that all L2 crates are included in the run
- trigger list is being downloaded ...
  - ◆ L1 framework is configured, COOR sends new configuration to TCC2 and L3 supervisor is configured
- run is started ...
  - ◆ TCC2 sends to configuration to all L2 crates (only now L2 crates know which inputs are enabled/disabled)



# L2 Operations

---

- When can you exclude a level 2 crate?
  1. CFT calibration
    - exclude x25 before the calibration
    - include x25 back in the readout when the calibration is finished
  2. when L2 expert asks you kindly (repair/test)
- How can DAQ shifter monitor L2?
  1. listen to daqAI, check üMon and daqdialog
    - ↳ DAQ monitoring tools ←
  2. check for presence of major L2 alarms
    - ↳ alarm display ←
  3. check l2df and messages in TCC2
    - ↳ L2 monitoring tools ←



# L2 Operations

---

- What is actually an L2 problem?
  - What is a problem with L2 but does not look like?
  - What isn't a problem with L2 but looks like it is?
- How to diagnose DAQ/L2 problems?
- How to solve DAQ/L2 problems?
  - (... I'm talking about some DAQ problems, only those L2-like, not all of them!)



# L2 - what-to-do-if ...

---

## Missing input

### ➤ Diagnostics:

- often announced by `daqAI` and observed in `üMon` and `l2df` GUIs
- `l2muc`, `l2muf`, `l2ctt` and `l2ps` often, but `l2cal` rarely
- `l2df` shows inputs **yellow** (16/16), except one being **green** (0/16) and message box states which channel and crate is involved, this crate and input crates could be **red** in `üMon`
- using `l2df` and `üMon` you must be able to diagnose the crate/channel which is not sending any data

### ➤ Action:

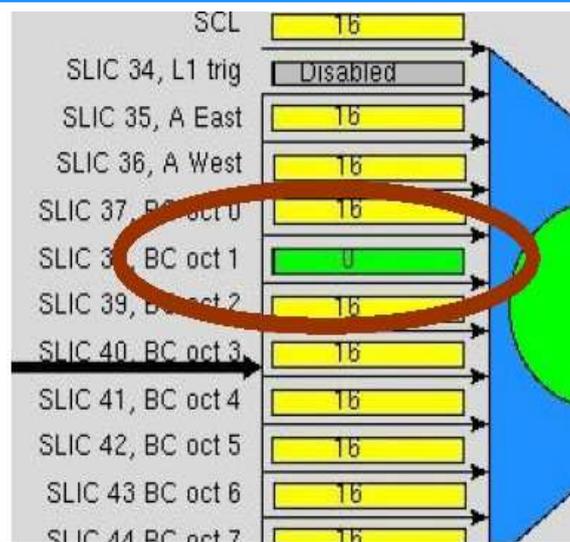
- ask CALMUO (`l2muc/l2muf/l2cal`), CFT (`l2ps/l2ctt`) or SMT (`l2ctt`) shifter(s) to fix the inputs to L2 crate(s)

**Fix the inputs to L2 first!**



# L2 - what-to-do-if ...

SCL	x50		x51	x56	x10	x20		SLIC 35
	x30	x11	x21	x31	x16	x26	x36	
SCL	x53		x52	x55	x12	x22		SLIC 36
	x32	x13	x23	x33	x15	x25	x35	
SCL	x50		x100	x110	x120	x130		SLIC 37
	x140	x200	x210	x220	x230	x240		
SCL	x51		x101	x111	x121	x131		SLIC 38
	x141	x201	x211	x221	x231	x241		
SCL	x52		x102	x112	x122	x132		SLIC 39
	x142	x202	x212	x222	x232	x242		
SCL	x53		x103	x113	x123	x133		SLIC 40
	x143	x203	x213	x223	x233	x243		
SCL	x53		x104	x114	x124	x134		SLIC 41
	x144	x204	x214	x224	x234	x244		
SCL	x55		x105	x115	x135	x145		SLIC 42
	x205	x215	x235	x245				
SCL	x56		x106	x116	x136	x146		SLIC 43
	x206	x216	x236	x246				
SCL	x50		x107	x117	x127	x137		SLIC 44
	x147	x207	x217	x227	x237	x247		
								SLIC 66
SCL			x70	x76	x278			SLIC 67
	x60	x66	x160	x166	x260	x266		
SCL			x72	x74	x279			SLIC 68
	x62	x64	x162	x164	x262	x264		
SCL			x90	x96	x298			SLIC 69
	x80	x86	x180	x186	x280	x286		
SCL			x92	x94	x299			SLIC 70
	x82	x84	x182	x184	x282	x284		



**Error Messages**

Copy Save Find Clear Save and Clear Quit received 4 min

10, Channel Index2, Channel ID x50, Readout Crate x3b

Thu Jul 31 16:27:58 2003 Missing Input: L2MUC, MBT 0, Channel 4, Alpha Index 5 \*FIXED\*

Thu Jul 31 16:27:58 2003 Missing Input: SLIC 37, BC oct 0 SLIC Index 3, Channel Index2, Channel ID x50, Readout Crate x3b \*FIXED\*

Thu Jul 31 16:28:04 2003 Missing Input: L2MUC, MBT 1, Channel 4, Alpha Index 12 \*FIXED\*

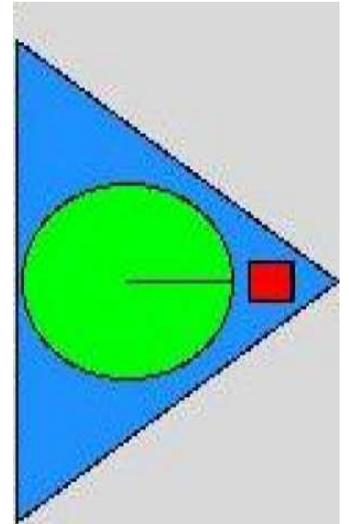
Thu Jul 31 16:28:04 2003 Missing Input: SLIC 44 BC oct 7 SLIC Index 10, Channel Index2, Channel ID x50, Readout Crate x3b \*FIXED\*

# L2 - what-to-do-if ...

## Corrupted input or crate/input is out-of-sync

### ➤ Diagnostics:

- rates are at zero and `l2df` shows an L2 crate **red** (interrupt)
- `L2RS` on `d0tcc2` might contain **red error messages** and crate is **100% FEB** in `daqdialog`



### ➤ Action:

- difficult to find out which inputs are out-of-sync. L2 expert needs to look into the log L2 files and at `l2mon`. Meanwhile, you try:
  - `sclinit`
  - `l2reset <L2_crate_name>`
- if it did not help, page the L2 expert

**When doing `l2reset`, make sure that all runs are stopped!**



# L2 - what-to-do-if ...

---

## L2 crate is 100% FEB

### ➤ Diagnostic:

➤ L2 crate is **red** in **daqdialog** and/or in **üMon**. L2 crate is always 100% FEB when one of its inputs is missing or is corrupted/out-of-sync. This "problem" is somehow similar to the previous cases.

➤ check **l2df** and **L2RS** on d0tcc2 for any additional information

### ➤ Action:

➤ first, try:

→ `sclinit`

→ `l2reset <L2_crate_name>`

➤ if it did not help, page the L2 expert



# L2 - what-to-do-if ...

---

## COOR ↔ L2 problems

### ➤ Diagnostic:

- L2 crate is not configured properly - this will be immediately noticed by the DAQ shifter because of **red** messages in **taker**. **Red error messages** will also appear in **L2RS** on d0tcc2.
- if you see **red l2dnl** in **coormon**, your last **coor\_reinit** or **l2reset** failed

### ➤ Action:

- **red** messages in **taker** - failed to start a run: if you just applied **l2reset** to **l2muc/l2muf**, wait ~30 sec and try again. **SLICs** need some time to boot up.
- in other cases, try:
  - `l2reset <L2_crate_name>`
- if this did not help, you need expert's assistance - page the L2 expert



# L2 - what-to-do-if ...

---

## L2 rack tripped

### ➤ Diagnostic:

- you should see **L2 major alarms** in the **alarm display**
- **d0tcc2** is frozen, because it cannot talk/connect to L2 crates in the tripped rack

### ➤ Action:

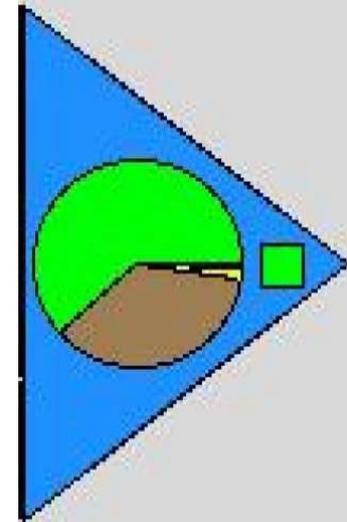
- page the OP shifter, and page the L2 expert - he could ask you to try to turn-on the rack. If you are not able to do so, you must page one of Fermilab's electrical personnel (eg. John Anderson).
- ... this is bad ...

# L2 - what-to-do-if ...

## Other problems

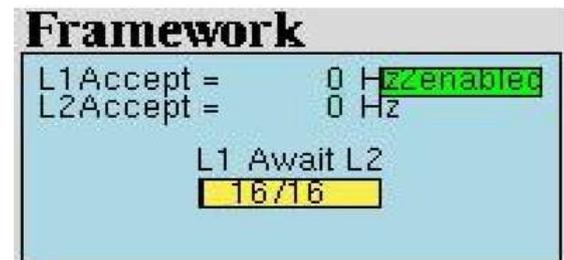
### ➤ SBC problem

- non-standard problem with L3 SBC in an L2 crate would exhibit itself in l2df as **brown** pie chart instead of **orange**
- try "l2reset <L2\_crate\_name>", then page the **L3** and L2 experts



### ➤ L2GBL problem

- you do not see any L2 crate with red square in l2df, or missing inputs to L2, nor any crates being red in üMon, but you might see "x1f" 100% FEB (plus other, slower, crates). The only other unusual thing is in l2df:
- try "l2reset <L2\_crate\_name>" on L2GBL, then page the L2 expert





# L2df - loading a trigger

File Help

All SLIC inputs in HEX

SLIC34	SCL	50	51	56	10	20	30
		11	21	31	16	26	36
SLIC35	SCL	53	52	55	12	22	32
		13	23	33	15	25	35
SLIC36	SCL	50	100	110	120	130	140
		200	210	220	230	240	
SLIC37	SCL	51	101	111	121	131	141
		201	211	221	231	241	
SLIC38	SCL	52	102	112	122	132	142
		202	212	222	232	242	
SLIC39	SCL	53	103	113	123	133	143
		203	213	223	233	243	
SLIC40	SCL	53	104	114	124	134	144
		204	214	224	234	244	
SLIC41	SCL	55	105	115	135	145	205
					215	235	245
SLIC42	SCL	55	106	116	136	146	206
					216	236	246
SLIC43	SCL	50	107	117	127	137	147
		207	217	227	237	247	
SLIC44							
SLIC66							
SLIC67	SCL	70	78	278	60	68	160
					158	260	268
SLIC68	SCL	72	74	278	62	64	162
					164	262	264
SLIC69	SCL	90	96	298	80	86	180
					186	280	286
SLIC70	SCL	92	94	298	82	84	182
					184	282	284

### L2MUC

SCL	Disabled
SLIC 34, L1 trig	Disabled
SLIC 35, A East	Disabled
SLIC 36, A West	Disabled
SLIC 37, BC oct 0	Disabled
SLIC 38, BC oct 1	Disabled
SLIC 39, BC oct 2	Disabled
SLIC 40, BC oct 3	Disabled
SLIC 41, BC oct 4	Disabled
SLIC 42, BC oct 5	Disabled
SLIC 43 BC oct 6	Disabled
SLIC 44 BC oct 7	Disabled

L1Bsy=0.00%  
L2Bsy=0.00%

### L2CAL

SCL	Disabled
CAL 1 eta -4:-1	Disabled
CAL 2 eta 1:4	Disabled
CAL 3 eta -8:-5	Disabled
CAL 4 eta 5:8	Disabled
CAL 5 eta -12:-9	Disabled
CAL 6 eta 9:12	Disabled
CAL 7 eta -16:-13	Disabled
CAL 8 eta 13:16	Disabled
CAL 9 eta -20:-17	Disabled
CAL 10 eta 17:20	Disabled

L1Bsy=0.00%  
L2Bsy=0.00%

### L2PS

SCL	Disabled
CPS axial 1	Disabled
CPS axial 2	Disabled
CPS axial 3	Disabled
CPS axial 4	Disabled
CPS stereo NU	Disabled
CPS stereo NV	Disabled
CPS stereo SU	Disabled
CPS stereo SV	Disabled
FPS north 1	Disabled
FPS north 2	Disabled
FPS south 1	Disabled
FPS south 2	Disabled

L1Bsy=0.00%  
L2Bsy=0.00%

### L2MUF

SCL	Disabled
SLIC 66, L1 trig	Disabled
SLIC 67 ABC NE	Disabled
SLIC 68 ABC NW	Disabled
SLIC 69 ABC SE	Disabled
SLIC 70 ABC SW	Disabled

L1Bsy=0.00%  
L2Bsy=0.00%

### L2GBL

SCL	Disabled
L1 HWFW	Disabled
I2cal EM	Disabled
I2cal jet	Disabled
I2cal ETmiss	Disabled
I2ctt STT PT	Disabled
I2ctt STT IP	Disabled
I2muc	Disabled
I2muf	Disabled
I2ps central	Disabled
I2ps forward	Disabled
I2ctt CTT track	Disabled

L1Bsy=0.00%  
L2Bsy=0.00%

### L2CTT/STT

SCL	Disabled
STT00	Disabled
STT10	Disabled
STT20	Disabled
STT30	Disabled
STT40	Disabled
STT50	Disabled
STT01	Disabled
STT11	Disabled
STT21	Disabled
STT31	Disabled
STT41	Disabled
STT51	Disabled
CFT 1	Disabled
CFT 2	Disabled
CFT 3	Disabled
CFT 4	Disabled

L1Bsy=0.00%  
L2Bsy=0.00%

wait_event	<span style="color: green;">■</span>
processing	<span style="color: orange;">■</span>
I2_answer	<span style="color: yellow;">■</span>
I3_readout	<span style="color: brown;">■</span>
collect_status	<span style="color: lightblue;">■</span>
reply_worker	<span style="color: purple;">■</span>
interrupt	<span style="color: red;">■</span>

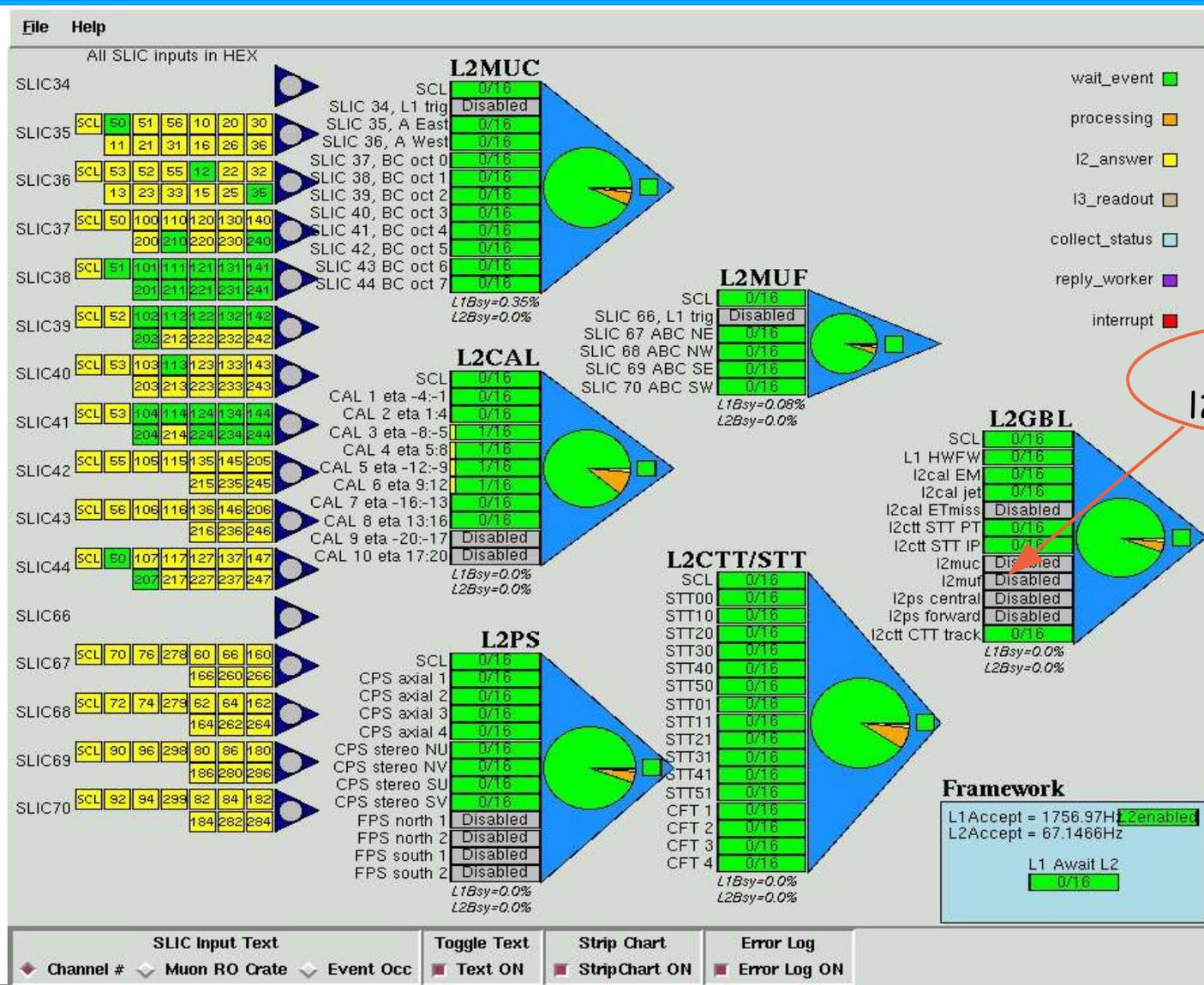
### Framework

L1 Accept = 0Hz	<span style="color: green;">■</span> L2enabled
L2 Accept = 0Hz	
L1 Await L2	<span style="color: green;">■</span> 0/16

SLIC Input Text	Toggle Text	Strip Chart	Error Log
◆ Channel #	◆ Muon RO Crate	◆ Event Occ	◆ Text ON
	◆ StripChart ON		◆ Error Log ON

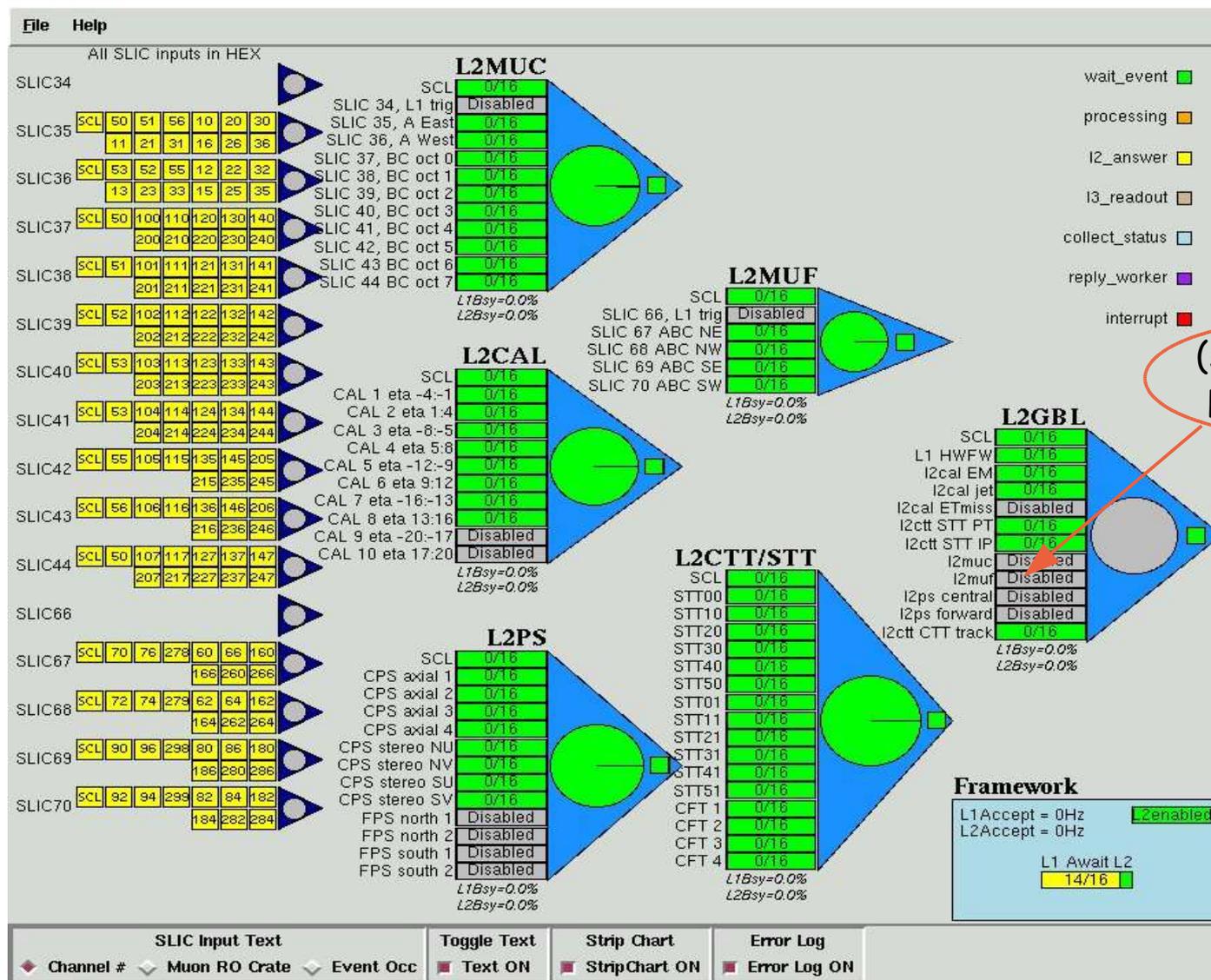


# L2df - global physics run (almost perfect)





# L2df - l2gbl is crashed ...





# L2 Experts - conacts

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- What are the duties of L2 experts?
  - diagnose and fix L2 problems
  - apply L2 hammers - medium and large
  - we often help to diagnose DAQ problems and determine whether it is a problem with L2, or not. Certainly, we will (should) try to help.
- How to contact L2 experts?
  - DØ building pager: **x4674**
  - primary pager: **(630) 266-0744**
  - or (the last resort) secondary pager:  
**(630) 266-0750**



# L2 Resources

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- Where to find L2 documentation?  
It is available from L2 web pages:

General L2 web page:

[www.pa.msu.edu/hep/d0/l2](http://www.pa.msu.edu/hep/d0/l2)

L2 online web page:

[www-d0online.fnal.gov/www/groups/trigger/l2/online](http://www-d0online.fnal.gov/www/groups/trigger/l2/online)

L2 DAQ web page:

[www-d0online.fnal.gov/www/groups/trigger/l2/online/daq\\_shifter/index.html](http://www-d0online.fnal.gov/www/groups/trigger/l2/online/daq_shifter/index.html)

L2 expert web page:

[www-d0online.fnal.gov/www/groups/trigger/l2/online/expert/index.html](http://www-d0online.fnal.gov/www/groups/trigger/l2/online/expert/index.html)